U. S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE/PARTICIPANT Environmental Management/Paducah Remediation Services, LLC (PRS)	**2. DATE** 06/29/07	**3. IDENTIFICATION SITE** Paducah Project DOE Portsmouth/Paducah Project Office (PPPO)
4. WBS ELEMENT CODE 04.11.04.02	**5. WBS ELEMENT TITLE** Surface Water Operable Unit (SWOU)	
6. INDEX LINE NO. N/A	**7. REVISION NO. AND AUTHORIZATION** Rev. 0	**8. DATE** 06/29/07
9. APPROVED CHANGES N/A		
10. SYSTEM DESIGN DESCRIPTION N/A	**11. BUDGET AND REPORTING NUMBER** N/A	

12. ELEMENT TASK DESCRIPTION

WBS STRUCTURE

The scope of this element includes the following subelements:

- WBS 04.11.04.02.01 Surface Water Subproject Management
- WBS 04.11.04.02.02 CERCLA Documentation
- WBS 04.11.04.02.03 SW Removal Actions
- WBS 04.11.04.02.04 Removal Action Completion Report

INTRODUCTION

Historical discharge practices associated with the Paducah Gaseous Diffusion Plant (PGDP) have resulted in the potential contamination of Sections 3, 4, and 5 of the North-South Diversion Ditch (NSDD), various internal plant ditches leading to Kentucky Pollution Discharge Elimination System (KPDES) outfalls, and storm sewers with radionuclides, metals, potential Resource Conservation and Recovery Act (RCRA)-listed wastes, and polychlorinated biphenyls (PCBs). This contamination also may have migrated to surface waters that drain into the Little Bayou Creek and Bayou Creek. This historical practice has resulted in the potential introduction of contaminants into both sediments and surface water.

In an effort to reduce, control, and minimize surface water off-site migration or contributing source areas, flow through sections of the NSDD has been limited by installing piping from the C-400-L, C-616-L, and Outfall 001 Lift Stations to a new discharge area at the C-616-C inlet control structure. Additionally, the C-613 Sedimentation Basin was constructed in accordance with the Remedial Design/Remedial Action Work Plan to assist with the collection of sediments associated with scrap yard activities. In order to determine the need for hot spot removal and to evaluate whether additional sediment control measures are needed, a Site Investigation/Risk Assessment (SI/BRA) was completed. This SI/BRA will provide information concerning the identification of hot spots within the ditches, outfalls, and storm sewer system that may be contributing to off-site migration and risks to human health and the environment. The results of the SI/BRA are being documented in the following report: *Surface Water Operable Unit (On-site) Site Investigation and Baseline Risk Assessment Report at the Paducah Gaseous Diffusion Plant, Paducah, Ky.*

In addition, an *Engineering Evaluation/Cost Analysis for Site-Wide Sediment Controls at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-1958&D1/R1) was prepared in February 2002 that indicated that two new sedimentation basins may be needed to address the prevention of the potential discharge of contaminated sediments and to minimize further migration of sediments as a result of ongoing plant activities. The Engineering Evaluation/Cost Analysis (EE/CA) indicated that the basins would be located at KPDES Outfalls 008 and 011. An engineering needs assessment that

incorporates the findings of the SI/BRA report will be performed to verify the need for potential sedimentation basins or alternative actions at Outfalls 008 and 011. If constructed, the basins will be designed to handle retention of a 10-year storm event, with a design life of 30 years.

Should the SI determine the need for hot spot removal, a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) non-time-critical removal action will be initiated to implement a selected removal alternative. Prior to implementation of the removal action, Federal Facility Agreement (FFA) documents will be prepared and approved; specifically these documents will include an EE/CA, a Removal Notification, an Action Memorandum, a Removal Action Work Plan (RAWP) for hot spot removal and a RAWP for construction of sedimentation basins and replacement of storm sewers. It should be noted that there will be a separate RAWP for the sedimentation basins and storm sewers.

LOGIC RELATIONSHIPS

Interfaces:

Internal to PRS:

- All PRS project managers and staff
- All subcontractors

External to PRS:

- U.S. Department of Energy (DOE) Portsmouth/Paducah Project Office and support contractors
- DOE Headquarters or other DOE sites (if applicable)
- U.S. Environmental Protection Agency (EPA)
- Commonwealth of Kentucky (KY)
- Site tenants including United States Enrichment Corporation (USEC); Uranium Disposition Services, LLC; and Swift & Staley Team (SST)
- USEC services in the area of property, information technology, radios, etc.
- SST, particularly in the areas of property management, information technology, and security.
- Nevada Test Site (NTS): Profiling and disposition of newly generated and classified and fissile low-level waste (LLW), if required or applicable.
- Energy*Solutions*: Profiling, treatment, and disposition of mixed and LLW, if required or applicable.
- Toxic Substances Control Act Incinerator, if required or applicable.
- Commercial treatment, storage, and disposal facility: For treatment and disposal of non radioactive hazardous waste, if required or applicable.
- Stakeholders
- Citizens Advisory Board and supporting contractor EHI.
- DOE Integrated Safety Management System (ISMS) Verification Team
- Other nonregulatory key interfaces

Time Sequencing with Other Work:

- Subproject Management – concurrent with activities related to remediation of Sections 3, 4, and 5 of the NSDD and PGDP Outfalls 001 (those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge), and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); replacement of plant storm sewers; sediment controls; and associated reporting.
- Project Management – Upon completion of the SWOU (On-site) scope; SWOU (Off-site) project can begin.
- Removal Notification – will be started at the same time as the evaluation of the EE/CA and the needs assessment for sedimentation basins or alternative actions at Outfalls 008 and 011 In order

to facilitate review and to reduce cost, the Removal Notification document will encompass the actions [sedimentation basins; NSDD Sections 3, 4, and 5; PGDP Outfalls 001 (those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge), and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); and plant storm sewer removal/replacement] within the SWOU WBS.

- EE/CA – An EE/CA will be prepared and will encompass the actions [sedimentation basins; NSDD Sections 3, 4, and 5; PGDP Outfalls 001 (those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge), and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); and plant storm sewer removal/replacement] within the SWOU WBS.
- Action Memorandum – Development can commence after approval of the Removal Notification and will be submitted after the public comment period for the EE/CA. In order to facilitate review and to reduce cost, the Action Memorandum document will encompass the actions [sedimentation basins; NSDD Sections 3, 4, and 5; PGDP Outfalls 001 (those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge), and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); and plant storm sewer removal/replacement] within the SWOU WBS.
- RAWP – In order to implement field actions as soon as possible, engineering activities associated with this plan will begin after submission of the D1 Action Memorandum.
- Removal Action Field Start – Field activities will proceed after approval of the RAWP and appropriate construction procurement and mobilization actions.

SCOPE DESCRIPTION

WBS 04.11.04.02.01 Surface Water Subproject Management

Provide overall management activities associated with this subproject. Activities performed under this subelement include the following:

- Perform technical, contractual and project functions necessary to effectively manage and report scope, schedule, and budget.
- Maintain all activities within the defined safety, environmental, and quality requirements.
- Perform technical and personnel management functions.
- Maintain technically qualified and properly trained personnel.
- Develop, evaluate, and report project performance metrics.
- Interface with DOE, KY, EPA, other prime contractors, and stakeholders, as needed.

The method(s) used for determining earned value for this WBS element is Level of Effort.

WBS 04.11.04.02.02 CERCLA Documentation

Development and approval of the CERCLA/FFA documents pertaining to the remediation of the NSDD Sections 3, 4, and 5 and PGDP Outfalls 001 (those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge), and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); potential installation of new sedimentation basins or alternative actions at KPDES Outfalls 008 and 011; and removal/replacement of the plant storm sewers will be prepared under this WBS subelement. Documents to be completed and associated WBS subelements are as follows.

Surface Water SI/BRA

A draft D0 SI/BRA Report has been developed and will be issued to DOE for review and approval. The Baseline Risk Assessment addresses both human health risk and ecological risk. Comments from DOE have been incorporated and a final draft D1 SI/BRA Report was submitted to the

regulators for review and comment. A D2 SI/BRA Report has been developed and submitted to the regulators for approval. A final D2/R1 SI/BRA Report will be developed and submitted to the regulators for approval.

SWOU Removal Notification and EE/CA

In order to facilitate review and to reduce cost, the Removal Notification document will encompass the actions [sedimentation basins; NSDD Sections 3, 4, and 5;PGDP Outfalls 001(those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge), and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); and plant storm sewer replacement] within the SWOU WBS. A draft D0 Removal Notification and EE/CA will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated, and a final draft D1 Removal Notification and EE/CA will be submitted to the regulators for review and comment. A D2 Removal Notification and EE/CA will be developed and submitted to the regulators for approval. A final D2/R1 EE/CA will be developed and submitted to the regulators for approval, if required.

SWOU Action Memorandum

In order to facilitate efficient review and to reduce cost, the Action Memorandum document will encompass all actions [sedimentation basins; NSDD Sections 3, 4, and 5; PGDP Outfalls 001 (those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge), and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); and plant storm sewer replacement] within the SWOU WBS. The draft D0 Action Memorandum will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated and a final draft D1 Action Memorandum will be submitted to the regulators for review and comment. A final D2 Action Memorandum will be developed and submitted to the regulators for approval. A final D2/R1 Action Memorandum will be developed and submitted to the regulators for approval, if required.

SWOU RAWP – Hot Spot Removal

A draft D0 RAWP will be developed and submitted for internal review, then issued to DOE for review and approval. A site-specific Health and Safety Plan, Sample and Analysis Plan, Waste Management Plan, and a Construction Quality Assurance (QA) Plan will be included in the appendices of this document. Comments from DOE will be incorporated and a final draft D1 RAWP will be submitted to the regulators for review and comment. A final D2 RAWP will be developed and submitted to the regulators for approval.

SWOU RAWP – Storm Sewers and Sedimentation Basins

A draft D0 RAWP, that includes design effort, will be developed and submitted for internal review, then issued to DOE for review and approval. A site-specific Health and Safety Plan, Sample and Analysis Plan, Waste Management Plan, and a Construction Quality Assurance (QA) plan will be included in the appendices of this document. Comments from DOE will be incorporated and a final draft D1 RAWP will be submitted to the regulators for review and comment. A final D2 RAWP will be developed and submitted to the regulators for approval.

The method(s) used for determining earned value for this WBS element is Percent Complete.

WBS 04.11.04.02.03 SW Removal Actions

Hot Spot Removal

The removal action scope includes the planning, evaluation, and conduct of the remediation of the NSDD Section 3, 4, and 5 and PGDP Outfalls 001 (those portions not addressed by the Scrap Metal

Basin), 002, 008, 010, 011, , 012 (those portions downgradient of the storm sewer discharge), and 015 and their associated internal ditches and areas (including SWMUs 92 and 97) . The removal action will be completed in accordance with the CERCLA decision documents. It is anticipated that the removal action will include waste characterization, excavation of hot spots, verification sampling to ensure hot spot removal, backfilling excavated areas to grade, and revegetating the areas, as appropriate. During construction, site-specific storm water/sediment run-on and runoff controls will be employed. Controls will include silt fencing, straw bales or diversion berms to prevent surface water run-on, and application of water spray during earthwork activities to prevent fugitive dust emissions and spread of contamination. Sediment controls will be removed when sufficient establishment of new vegetative growth is established. Based upon preliminary data from the SWOU SI/BRA report, the *in situ* volume of soils to be excavated is expected to be 86,375 ft^3 for the NSDD Sections 3, 4, and 5 and 227,450 ft^3 for the internal plant ditches that lead to KPDES outfalls. Estimates were based upon the calculation of the hot spot area. The hot spot area is defined as an area bound by the next "clean sample" on each side of the "hot spot" and assumes a depth of 2 feet.

The waste disposition scope includes the disposal of waste material generated as part of the Removal Action. The waste soil material generated from the NSDD Section 3, 4, and 5 remediation will be transported to and disposed of at an appropriate receiving facility. It is anticipated, based on the SWOU SI/BRA report, that 65% of the waste soil generated from the NSDD Sections 3, 4, and 5 will be disposed of at an off-site disposal facility and that 35% of the waste soils will be disposed of at the on-site C-746-U Landfill. For the internal ditches, 49% of the waste soil generated will be disposed of at an off-site disposal facility and 51% of the waste soils will be disposed of at the on-site C-746-U Landfill. Disposal at an off-site facility is required due to the concentrations of PCBs and the exceedance of the C-746-U Landfill waste acceptance criteria (WAC) for radionuclides.

The waste disposition scope includes the disposal of waste material generated as part of the removal action. All waste soil material generated from remediation of the NSDD Sections 3, 4, and 5 and PGDP Outfalls 001(those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge),and 015 and their associated internal ditches and areas (including SWMUs 92 and 97) will be transported to and disposed of at an appropriate receiving facility. It is anticipated that approximately 209,411 ft^3 (with swell) will be transported to and disposed of at the Energy*Solutions* site in Utah. It is anticipated up to 182,284 ft^3 (with swell) will be transported to and disposed of at the C-746-U Landfill.

The Request for Proposals (RFP) did not contain any of the data associated with the SI/BRA Investigation. Waste volume data has been recalculated utilizing the current analytical data available from the SI/BRA investigation.

Construction of Sedimentation Basins and Storm Sewers

The removal action scope includes the evaluation and construction of an appropriate type of sedimentation control at KPDES Outfalls 008 and 011 and removal/replacement of plant storm sewers near C-333-A, C-340, C-337-A, C-535, and C-537. Currently, sedimentation basins are the recommended sedimentation control for Outfalls 008/011, as specified in the EE/CA prepared in February 2002. The removal action will be completed in accordance with the CERCLA decision documents.

Sedimentation Basins:

Outfall 008 – Evaluate the need to construct a new sedimentation basin at Outfall 008. The evaluation will consist of an engineering study documented by an engineering needs analysis document. It is anticipated that a new sedimentation basin capable of retaining a 10-year storm event for the entire

drainage area at Outfall 008 will not be required and that an alternate sedimentation control system consisting of an in-line treatment system and a modified sedimentation basin for a reduced Outfall 008 drainage area will be sufficient. The alternate sedimentation control system (e.g., in-line treatment system along with a modified sedimentation basin) will be detailed as part of the engineering design. The design will encompass civil/structural, mechanical, and electrical disciplines. Design efforts will be performed as described in the applicable CERCLA decision documents. It is anticipated that the removal action will include the pre-characterization of the footprint of the alternate sedimentation control system (e.g., in-line treatment system along with a modified sedimentation basin) at Outfall 008 for worker protection and waste characterization. The construction phase of the Outfall 008 alternate sedimentation control system (e.g., in-line treatment system along with a modified sedimentation basin) will be executed as described in the CERCLA decision documents and as detailed in the approved engineering design package. During construction, site-specific storm water/sediment run-on and runoff controls will be employed. Controls will include silt fencing, straw bales or diversion berms to prevent surface water run-on, and application of water spray during earthwork activities to prevent fugitive dust emissions and spread of contamination. Sediment controls will be removed when sufficient new vegetative growth is established. All excess soil resulting from the installation of the alternate sedimentation control system (e.g., in-line treatment system along with a modified sedimentation basin) at Outfall 008 is assumed to be “clean” and will be utilized as spoils or backfill.

Outfall 011 – Evaluate the need to construct a new sedimentation basin at Outfall 011. The evaluation will consist of an engineering study documented by an engineering needs analysis document. It is anticipated that a new sedimentation basin at Outfall 011 will not be required and that an alternate sedimentation control system (e.g., in-line treatment system) will be sufficient. The alternate sedimentation control system will be detailed as part of the engineering design. The design will encompass civil/structural, mechanical, and electrical disciplines. Design efforts will be performed as described in the applicable CERCLA decision documents. It is anticipated that the removal action will include the pre-characterization of the footprint of the alternate sedimentation control system (e.g., in-line treatment system) at Outfall 011 for worker protection and waste characterization. This activity previously had been conducted for the Outfall 011 basin footprint and historical data is available. The construction phase of the Outfall 011 alternate sedimentation control system (e.g., in-line treatment system) will be executed as described in the CERCLA decision documents and as detailed in the approved engineering design package. During construction, site-specific storm water/sediment run-on and runoff controls will be employed. Controls will include silt fencing, straw bales or diversion berms to prevent surface water run-on, and application of water spray during earthwork activities to prevent fugitive dust emissions and spread of contamination. Sediment controls will be removed when sufficient new vegetative growth is established. All excess soil material generated from the installation of the alternate sedimentation control system (e.g., in-line treatment system) at Outfall 011 is assumed to be “clean” and will be utilized as spoils or backfill.

Storm Sewers:
The removal and replacement of storm sewers is expected to consist of 1,310 linear ft of sewer pipe and approximately eight manholes. The waste disposition scope includes the disposal of waste material generated as part of the removal action. Excess soil resulting from the storm sewers remediation will be transported to and disposed of at an appropriate receiving facility. It is anticipated that soil excavated as part of the storm sewer replacement will be disposed of at the on-site C-746-U Landfill.

The method(s) used for determining earned value for this WBS element is Percent Complete.

Before beginning fieldwork, the project team must have an internal field review (IFR). For this IFR,

the project team will put together a work package. This work package includes the following:

- Work instructions – includes hold points
- Training matrix and evidence of training
- UCD/USQD
- Lessons Learned
- Work authorization and work release from facility managers
- Procedures
- AHA
- Excavation/Penetration Permits
- RWP
- Team Meeting documentation
- Project Organizational Chart

In addition to the above, a Sampling Analysis Plan (SAP), Quality Assurance Plan (QAP), Waste Management Plan (WMP), and Health and Safety Plan (H&S) may be needed for any non-CERCLA actions.

For CERCLA actions, the appropriate FFA/CERCLA documentation will be required which will include SAP, QAP, WMP, H&S Plan, and other documents, as applicable to the action. These documents may require regulatory approval.

The work package and other documentation are developed by personnel that charge to this project and also by personnel that charge to project support service center (i.e., QAP and RWP).

WBS 04.11.04.02.04 Removal Action Completion Report

Development and approval of the Removal Action Completion Report pertaining to the remediation of the NSDD Sections 3, 4, and 5 and PGDP Outfalls 001 (those portions not addressed by the Scrap Metal Basin), 002, 008, 010, 011, 012 (those portions downgradient of the storm sewer discharge), and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); potential installation of new sedimentation basins or alternative actions at KPDES Outfalls 008 and 011; and removal/replacement of the plant storm sewers will be prepared under this WBS subelement.

The method(s) used for determining earned value for this WBS element is Percent Complete.

DELIVERABLES

WBS 04.11.04.02.01 Surface Water Subproject Management

Element Milestones:

- None

Element Deliverables:

- Paducah PRS QA Project Plan
- Paducah PRS Environmental, Safety, and Health (ES&H) Plan
- Provide input to the following reports and submittals (if applicable):
  - Monthly Project Performance Report
  - Risk Management Plan Updates
  - Site Management Plan (SMP)
  - Solid Waste Management Unit (SWMU) Assessment Report
  - Semiannual Critical Analysis Report
  - Presentations

- FFA briefings
- Labor determinations
- Gold Chart Performance Metrics
- Annual updates to Site Treatment Plan
- Annual Compliance Agreement Report
- Annual ISMS Update
- Annual Work Smart Standards Update
- Financial Reporting, Management Analysis Reporting System
- Annual Statement of Costs Incurred and Claimed
- FFA Semiannual Progress Report
- Remedial Action/Regulatory Commitment Tracking Report
- Other reports/documents, as necessary

WBS 04.11.04.02.02 CERCLA Documentation

Element Milestones:

- D1 SI/BRA Report
- D2 SI/BRA Report
- Approval of SI/BRA Report
- Removal Notification
- D1 EE/CA
- D2 EE/CA
- Approval of EE/CA
- D1 Action Memorandum
- D2 Action Memorandum
- Approval of Action Memorandum
- D1 Removal Action Work Plan (Hot Spot Removal)
- D2 Removal Action Work Plan (Hot Sport Removal)
- Approval or Removal Action Work Plan (Hot Sport Removal)
- D1 Removal Action Work Plan (Sedimentation Basins/Storm Sewers)
- D2 Removal Action Work Plan (Sedimentation Basins/Storm Sewers)
- Approval of Removal Action Work Plan (Sedimentation Basins/Storm Sewers)

- Element Deliverables:SI/BRA Report, D0-R1, D1, D2, and D2/R1 versions
- Removal Notification and EE/CA, D-1, D0, D1, D2, D2/R1 versions
- Action Memorandum, D-1, D0, D1, and D2 versions
- Removal Action Work Plan, D-1, D0, D1, and D2 versions
- Delivery of documents to the Infrastructure contractor for archive and placement in the Environmental Information Center (EIC).

WBS 04.11.04.02.03 SW Removal Actions

Element Milestones:

- Removal Action Field Start (Hot Spot Removal)
- Hot Spot Removal Complete
- D1 O&M Plan
- D2 O&M Plan
- Approval of O&M Plan
- Sedimentation Basin/Storm Sewer Field Start
- Complete Storm Sewer Replacement

- Complete In-line Treatment System
- Complete Construction of Sedimentation Basin at Outfall 008

Element Deliverables:

- As-built drawings–four weeks following demobilization
- Engineering Needs Analysis Report for the Sedimentation Basins at Outfall 008 and Outfall 011.
- Completion of construction activities.
- Operation and Maintenance (O&M) Plan for Outfall 008 modified sedimentation basin pump station.
- Waste generated prior to June 2009 will be disposed of prior to 9/30/09; waste generated after June 2009 will be disposed of by incoming contractor.

WBS 04.11.04.02.04 Removal Action Completion Report

Element Milestones:

- D1 Removal Action Completion Report
- D2 Removal Action Completion Report
- Approval of Removal Action Completion Report

Element Deliverables:

- Removal Action Completion Report, D-1, D0, D1, D2, and D2/R1 versions
- Delivery of documents to the Infrastructure contractor for archive and placement in the Environmental Information Center (EIC).

REQUIREMENTS

- CERCLA/National Contingency Plan
- KY Hazardous Waste Permit (KY8-890-008-982)
- FFA for PGDP
- SMP for PGDP (annual revisions)
- Applicable state and federal laws and regulations (applicable or relevant and appropriate requirements)
- PRS ISMS
- UEO-1066, as updated - Lease Agreement between DOE and USEC, Revision 4, dated October 30, 2001
- Enclosure to GDP 95-0018, as updated - USEC and DOE Resolution of Shared Site Issues, Revision 1, dated March 30, 1998
- Applicable PRS plans, policies, and procedures.
- WAC for all applicable treatment and disposal facilities that were in effect on April 24, 2006.
- Applicable DOE Orders
- Applicable Federal Acquisition Regulations

It is the core value of PRS that the safety and health of every worker, the public at large, and our environment are the most important assets that we are entrusted to protect. To accomplish this, an ISMS, based on DOE's ISMS, has been implemented that incorporates the five core functions and is based on the seven guiding principles. The objective of ISMS is to systematically integrate safety and environmental protection into the planning and execution of all work activities. The term safety encompasses Nuclear Safety, Industrial Safety, Industrial Hygiene, Occupational Health, Health Physics, and environmental issues. ISMS requirements flow down to PRS subcontractors. The five core functions are (1) define the scope of work, (2) analyze hazards, (3) develop and implement

hazard controls, (4) perform work within controls, and (5) provide feedback and continuous improvement. The seven guiding principles are (1) line management responsibility for safety, (2) clear roles and responsibilities, (3) competence commensurate with responsibility, (4) balanced priorities, (5) identification of safety standards and requirements, (6) hazard control tailored to work being performed, and (7) operations authorization.

Before a subproject begins, several activities must be completed that demonstrate that all involved in the project have completed rigorous health and safety reviews and that all potential hazards of doing the work have been identified. The routine activities in remedial actions are conducted in accordance with standard operating procedures, activity hazard analyses, and Integrated Safety Management plans. Nonroutine work will require a readiness assessment, as necessary, to ensure complete health, safety, and environmental reviews prior to work start. This assessment is conducted by people experienced in similar kinds of work with the right to examine all aspects of a project about to commence and requires that the project team provide documented evidence that any applicable requirements of the job have been met.

SCOPE ASSUMPTIONS

- It will be acceptable to issue one Removal Notification, an Action Memorandum, and EE/CA that addresses the actions within the Surface Water OU Level 5 WBS.
- The portion of the waste soil excavated from NSDD Sections 3, 4, and 5 and PGDP Outfalls 001, 002, 008, 010, 011, and 015 and their associated internal ditches and areas (including SWMUs 92 and 97) that are targeted to be dispositioned at C-746-U Landfill will meet the WAC.
- Excess soil generated from the removal/replacement of storm sewers near C-333-A, C-340, and C-337-A will meet the C-746-U Landfill WAC.
- Previous studies and estimates related to Outfalls 008 and 011, including hydrology, geotechnical and other engineering studies, hydraulic calculations, and cost estimates are available.
- Funding will be available to perform this action.
- The engineering needs assessment will verify the need for a sedimentation basin or some alternate type of sedimentation control at KPDES Outfall 008. Should sedimentation control be required, it is assumed that a cost benefit analysis will support the alternative installation of an in-line treatment system and the construction of a modified sedimentation basin for reduced Outfall 008 drainage area in lieu of a full-size sedimentation basin capable of retaining a 10-year storm event for the entire drainage area.
- The engineering needs assessment will verify the need for a sedimentation basin or some alternate type of sedimentation control at KPDES Outfall 011. Should sedimentation control be required, it is assumed that a cost benefit analysis will support the alternative installation of an in-line treatment system for Outfall 011 in lieu of a full-size sedimentation basin capable of retaining a 10-year storm event.

COMPLETION CRITERIA

WBS 04.11.04.02.01 Surface Water Subproject Management

- Completion of technical and reporting requirements for the remediation of Sections 3, 4, and 5 of the NSDD and PGDP Outfalls 001, 002, 008, 010, 011, and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); sedimentationcontrols; and replacement of plant storm sewers.

WBS 04.11.04.02.02 CERCLA Documentation

- Completion of the engineering needs assessment that will verify either the need for sedimentation basins at Outfalls 008 and 011 or propose potential alternate actions,
- EPA/KY approval of the Final Removal Action Work Plan,
- Delivery of copies of all applicable documents to the Administrative Record, and
- Delivery of copies of documents and files to the Infrastructure contractor for archival and placement in the EIC.

WBS 04.11.04.02.03 SW Removal Actions

- Excavation of hot spots associated with NSDD Section 3, 4, and 5 and PGDP Outfalls 001, 002, 008, 010, 011, and 015 and their associated internal ditches and areas (including SWMUs 92 and 97); backfilling excavated areas to grade; and revegetating the areas as appropriate;
- Installation of a sedimentation basin or some type of alternate sedimentation control system at Outfall 008;
- Area surrounding the Outfall 008 basin will be backfilled, excavated to grade, and revegetated, as appropriate;
- Installation of alternate sedimentation control system (i.e., in-line treatment system) at Outfall 011;
- Area surrounding the Outfall 011 alternate sedimentation control system (i.e., in-line treatment system) will be backfilled, excavated to grade, and revegetated as appropriate;
- Removal and replacement of storm sewer piping and the installation of approximately eight manholes;
- Areas surrounding the storm sewer removal effort will be backfilled, excavated to grade, and re-vegetated, as appropriate;
- Excess soil associated with the installation of the basins will be properly staged for future use as spoils and backfill material;
- Completion of all construction activities and removal/disposition of waste, excavated material, and construction debris;
- Waste will be disposed of within one year of generation;
- Waste generated prior to 06/30/09 will be disposed of prior to 09/30/2009; and
- Completion of O&M Plans.

WBS 04.11.04.02.04 Removal Action Completion Report

- Completion of the Removal Action Completion Report
- EPA/KY approval of the Final Removal Action Completion Report,
- Delivery of copies of all applicable documents to the Administrative Record, and
- Delivery of copies of documents and files to the Infrastructure contractor for archival and placement in the EIC.

CERCLA AREAS AND SWMUs

SWMU No.	Description
58	NSDD (Outside)
60	C-375-E2 Effluent Ditch (KPDES 002)
61	C-375-E5 Effluent Ditch (KPDES 013)
62	C-375-S6 SW Ditch (KPDES 009)
63	C-375-W7 Oil Skimmer Ditch (KPDES 008)
66	C-375-E3 Effluent Ditch (KPDES 010)
67	C-375-E4 Effluent Ditch (C-340 Ditch)
68	C-375-W8 Effluent Ditch (KPDES 015)

1. PROJECT TITLE/PARTICIPANT	2. DATE	3. IDENTIFICATION SITE
Environmental Management/Paducah Remediation Services, LLC (PRS)	06/29/07	Paducah Project DOE Portsmouth/Paducah Project Office (PPPO)
4. WBS ELEMENT CODE 04.11.04.02	**5. WBS ELEMENT TITLE** Surface Water Operable Unit (SWOU)	

69	C-375-W9 Effluent Ditch (KPDES 001)
92	Fill area for dirt from the C-420 PCB Spill Site
97	C-601 Diesel Spill
102	Plant Storm Sewer
168	KPDES Outfall Ditch 012
526	Internal Plant Drainage Ditches

RISK MANAGEMENT

See Risk Management Plan for analysis

Risk was mitigated through the following efforts:

- Continue to perform due diligence in all work activities to reduce the possibility of safety incidents.
- Perform due diligence to ensure that waste is properly packaged and that transportation conveyances are properly loaded.
- Follow waste characterization, packaging, transportation, and disposition procedures and plans.
- Ensure that documents are written professionally and accurately.
- Ensure that fieldwork is carried out safely and in accordance with work instructions.
- DQOs will have qualitative and quantitative statements derived from the DQO Process that clarify study objectives, define the appropriate type of data, and specify the tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions and process knowledge.
- Ensure QA/QC procedures address potential system and equipment failures.
- Provide DOE with the appropriate documentation for the sole source procurement in the consent package.
- Subcontractor will follow ALARA principles and approved decontamination procedures.
- Ensure engineering design planning and review processes meet or exceed a design's intent for implementation.

BASIS OF ESTIMATE

1. Summary of Site Conditions

The SWOU consists of source units that primarily contain surface water contamination or sources, such as soil and sediments that potentially contribute to surface water contamination. These units include the NSDD, internal plant outfall ditches, impoundment ponds, Bayou Creek, and Little Bayou Creek. DOE, EPA, and Kentucky Environmental and Public Protection Cabinet have agreed that preventing off-site migration of contaminants is the highest sitewide priority for nonemergency cleanup activities at PGDP. Cleanup activities for the SWOU will be performed as a series of prioritized response actions. The first sequenced response action for on-site portions of the SWOU, includes the following areas at PGDP:

- NSDD Sections 3, 4, and 5;
- PGDP outfalls (001, 002, 008, 010, 011, 012, and 015);
- Internal ditches associated with the outfalls at PGDP, including SWMUs 92 and 97; and
- PGDP storm sewers associated with C-333-A, C-337-A, C-340, C-535, and C-537.

A sampling and analysis plan (DOE/OR/07-2137&D2/R1, Sample and Analysis Plan for Site Investigation and Risk Assessment of the Surface Water Operable Unit) was developed and approved.

1. PROJECT TITLE/PARTICIPANT	2. DATE	3. IDENTIFICATION SITE
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4. WBS ELEMENT CODE	**5. WBS ELEMENT TITLE**	
04.11.04.02	Surface Water Operable Unit (SWOU)	

The SI/BRA has been completed and the SI/BRA report was issued November 14, 2006.

2. Estimating Methods

☐ Parametric ☒ Bottom-Up ☐ Other: _____

3. Sources of Estimating

- Labor effort was developed based on previous experience performing similar activities.
- Professional experience with similar types of activities at Fernald, East Tennessee Technology Park, and NTS.
- This estimate is based on the information provided in the statement of work, reference documents, and interviews conducted with individuals familiar with the task.
- Material and other direct cost (ODC) costs are based on vendor quotes and previous estimates for similar work.
- Previous experience for preparing similar documents for similar work.
- Equipment fuel, oil, gas and maintenance (FOGM) costs are based on Construction Industry Blue Book rates.
- Equipment rentals costs are Shaw E&I predetermined equipment rates and the Blue Book rental lease rates.
- Material and ODC costs are based on vendor quotes, previous estimates for similar work, National Alliance contract, and equipment cut sheets from manufacturer's catalogs.
- Government Furnished Equipment provided was reviewed and applied as appropriate to this task.

4. Basis of Estimate (Unescalated Values)

WASTE VOLUMES

See attached waste performance metrics, as applicable.

PROJECT SCHEDULE

See attached schedule.

BASELINE BY YEAR

See attached Baseline by Year Report.